

Child: Mommy, my teacher was talking about the greenhouse effect. What is that?

Mother: Well, when sunlight enters our planet's atmosphere and heats up the surface, the earth is warmed. It's similar to what occurs in a greenhouse where plants are grown during the winter like where grandma has her flowers. The warming is called the greenhouse effect and it helps keep the earth's climate even.

Child: Why does everybody talk about it? Is it bad for the earth?

Mother: People talk about it because if the earth's temperature increases too much, it could alter the world's climate, maybe permanently. Almost all of this heating is due to water vapor in the atmosphere, but other gases also help to heat things up. Scientists have found out that the amount of these gases has been steadily increasing over time and people are now concerned that the earth's temperature will rise faster than it has in the past. If it continues to rise unchecked, it can lead to undesired changes in our world's climate. Perhaps the earth's temperature could heat up too much. One of these gases is called carbon dioxide. Have you heard of that before?

Child: Uh-uh (No). What's carbon dioxide?

Mother: Carbon dioxide is an important part of how our living planet works. We breathe in oxygen and breathe out carbon dioxide. Plants around us absorb the carbon dioxide that we exhale and along with the sun's help, convert it to energy in order to grow. This is called photosynthesis and like a big cycle it releases oxygen back into the air for humans and other animals to breathe. So this carbon dioxide exists in nature. Cutting down trees and using something called fossil fuels increases the amount of carbon dioxide in the air. If there is too much of this gas, it could upset the nature cycles in our planet.

Child: Is there too much of it in the air?

Mother: Some scientists have predicted that before the end of this century, carbon dioxide in the atmosphere will be double what it was a couple hundred years ago. Is it too much? Maybe.

Child: Can't we stop making carbon dioxide?

Mother: It's difficult because so much of the world depends on fossil fuels for energy. We need fossil fuels to help us heat and light our houses, run our computers, fuel the cars and airplanes, and power our factories to build the things we need. If we stopped using fossil fuels, there wouldn't be enough energy to go around. The world's population is increasing and people need even more as time goes on.

Child: Do I have enough energy?

Mother: Yes, I think you have enough. Your body has energy for moving and exercising. Actually there are many different ways of generating energy. Hydropower uses water. Solar energy uses the sun, like for those call boxes we see on the side of the highway if someone needs help, and even nuclear energy.

Child: So we can use those energies instead?

Mother: Yes, we can use all those things, but we still need fossil fuels to handle everything that the world population wants to run and power. We certainly should do our best to conserve energy. We will still need fossil fuels well into the future and there are things we can do to reduce the rate of carbon dioxide in the air. Scientists have been able to develop more efficient energy and energy that can be recycled or renewed. To keep levels of carbon dioxide down, there's a group of techniques called carbon sequestration.

Child: What is carbon sequestration?

Mother: Carbon sequestration means taking the carbon we've used from nature and returning it back into the earth where it came from. It's sort of like capturing and storing carbon dioxide like when you caught those fireflies and we let them stay in the glass jar.

Child: But can you catch carbon dioxide and put it in a jar?

Mother: Not exactly, but many researchers in the U.S. and around the world are trying to find the answer to that question. Some things that the researchers have come up with are actually kind of neat. There's an oil company in Norway that is separating carbon dioxide from natural gas and injecting it back into the deep saltwater reservoirs beneath gas fields at the North Sea. So part of the natural gas is going back to where it came from deep under the ocean. And other people have ideas about growing more forests so that even more trees and plants can use up some of the leftover carbon dioxide.

Child: People should plant a zillion trees.

Mother: Great idea. Scientists are actually trying to figure out how to enhance nature, that is, make it even better. Photosynthesis, which is the process of how plants take carbon dioxide and recycle it. They are working on new ways for farming and creating useful products like low-cost fertilizer so that crops will grow better and use up even more carbon dioxide in the air.

Child: So what are people going to do in the future?

Mother: Many researchers and scientists are working very hard to find solutions to the buildup of carbon dioxide emissions on earth. It may take a long time to solve this. Many different approaches will have to be applied and more research will have to be done. It's a growing challenge.